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January 13, 2020

VIA ELECTRONIC FILING

The Honorable Jocelyn G. Boyd
Chief Clerk/Administrator
Public Service Commission of South Carolina
101 Executive Center Drive, Suite 100
Columbia, South Carolina 29210

RE: South Carolina Energy Freedom Act (H.3659) Proceeding to Establish Duke Energy Carolinas, LLC's Standard Offer, Avoided Cost Methodologies, Form Contract Power Purchase Agreements, Commitment to Sell Forms, and Any Other Terms or Conditions Necessary (Includes Small Power Producers as Defined in 16 United States Code 796, as Amended) – S.C. Code Ann. Section 58-41-20(A)

South Carolina Energy Freedom Act (H.3659) Proceeding to Establish Duke Energy Progress, LLC's Standard Offer, Avoided Cost Methodologies, Form Contract Power Purchase Agreements, Commitment to Sell Forms, and Any Other Terms or Conditions Necessary (Includes Small Power Producers as Defined in 16 United States Code 796, as Amended) – S.C. Code Ann. Section 58-41-20(A)

Docket Nos. 2019-185-E and 2019-186-E

Dear Ms. Boyd:

Please find enclosed for filing the *Petition for Reconsideration or Rehearing* of the South Carolina Coastal Conservation League and the Southern Alliance for Clean Energy. Pursuant to the electronic service agreement in this docket, we are serving a copy of these filings on all parties of record.

Please contact me if you have any questions concerning this filing.

Sincerely,

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STATE OF SOUTH CAROLINA

BEFORE THE PUBLIC SERVICE COMMISSION

DOCKET NO. 2019-185-E
DOCKET NO. 2019-186-E

In the Matter of: South Carolina Energy Freedom Act (H.3659) Proceeding to Establish Duke Energy Carolinas, LLC's Standard Offer, Avoided Cost Methodologies, Form Contract Power Purchase Agreements, Commitment to Sell Forms, and Any Other Terms or Conditions Necessary (Includes Small Power Producers as Defined in 16 United States Code 796, as Amended) - S.C. Code Ann. Section 58-41-20(A), and South Carolina Energy Freedom Act (H.3659) Proceeding to Establish Duke Energy Progress, LLC's Standard Offer, Avoided Cost Methodologies, Form Contract Power Purchase Agreements, Commitment to Sell Forms, and Any Other Terms or Conditions Necessary (Includes Small Power Producers as Defined in 16 United States Code 796, as Amended) - S.C. Code Ann. Section 58-41-20(A)	**SOUTHERN ALLIANCE FOR CLEAN ENERGY AND SOUTH CAROLINA COASTAL CONSERVATION LEAGUE'S PETITION FOR RECONSIDERATION OR REHEARING**

INTRODUCTION

The South Carolina Coastal Conservation League ("CCL") and Southern Alliance for Clean Energy ("SACE") (collectively, the "Conservation Groups") respectfully petition the Public Service Commission of South Carolina ("Commission") for reconsideration or rehearing of its January 2, 2020 Order 2019-881(A), Amended Order Approving Duke Energy Carolinas, LLC's and Duke Energy Progress LLC's Standard Offer Tariffs, Avoided Cost Methodologies, Form Contract Power Purchase Agreements, and Commitment to Sell Forms (the "Order") in the above-captioned matters. More specifically, the Conservation Groups request reconsideration of the Commission's determinations regarding Duke Energy Carolina ("DEC") and Duke Energy Progress's ("DEP") (collectively, "Duke Energy" or "the Companies") proposed seasonal allocation of capacity value. Conservation Groups also join in and expressly adopt by reference the petition for rehearing or reconsideration filed by South Carolina Solar Business Alliance ("SBA") and Johnson Development and Associates ("JDA") in this proceeding, addressing additional issues including quantification of avoided energy rates, combustion turbine costs, and standard contract length.

Both the South Carolina Energy Freedom Act ("EFA") and federal Public Utilities Regulatory Policies Act ("PURPA") are meant to encourage the development of independently produced renewable energy.[1] The Commission's Order thwarts this

[1] As the U.S. Supreme Court has recognized, "Section 210 of PURPA was designed to encourage the development of cogeneration and small power production facilities." *American Paper Inst. v. Am. Elec. Power Serv. Corp.*, 461 US 402, 405 (1983). In enacting PURPA, "Congress believed that increased use of [renewable energy] would reduce the demand for traditional fossil fuels" and it recognized that electric utilities have traditionally been "*reluctant* to purchase power from, and to sell power to, the nontraditional facilities." *FERC v. Mississippi*, 456 U.S. 742, 750 (1982) (emphasis added). Likewise, under the South Carolina Energy Freedom Act, the Commission "shall treat small power producers on a fair and equal footing with electrical utility-owned resources" by ensuring that rates accurately reflect avoided costs; that

objective by approving avoided cost rates that do not fully compensate QFs for Duke Energy's true avoided production costs and are so low as to block entrants to the market.

Conservation Groups do not contend it was the Commission's intent to discourage the deployment of independently produced renewable energy. But the dramatic impact of the Commission's Order along with the novel issues raised by the first-ever application of the EFA's avoided cost provisions merit the Commission reconsidering certain key issues in this proceeding. One of these issues is the seasonal allocation of capacity value approved by the Commission, which is the focus of this petition for reconsideration or rehearing. Conservation Groups also address in this petition the issue of risk as it pertains to utilities and qualifying facilities, and ask the Commission to reconsider its position on the allocation of risk.

Other critical issues determined by the Commission in the Order include quantification of avoided energy costs, combustion turbine costs, and contract length. On those issues, Conservation Groups have reviewed the petition for rehearing or reconsideration by SBA and JDA. Conservation Groups hereby adopt and incorporate by reference the SBA and JDA petition for reconsideration or rehearing.

Preliminary Matter: Risk Analysis

As a preliminary matter, Conservation Groups request that the Commission reconsider its findings and conclusions regarding ratepayer risk as it relates to utility-owned generation and independently owned renewable energy generation. The record

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power purchase agreements and related terms and conditions are commercially reasonable and consistent with federal law; and that avoided energy, capacity, and ancillary services are fairly quantified. S.C. Code 58-41-20(B).

included extensive evidence that independently produced renewable energy benefits ratepayers and serves the public interest, while avoiding many of the risks associated with utility-owned generation. Yet the Order failed to fully account or acknowledge many these benefits and factors that mitigate any perceived risk of overpayment for QF power. The Order further failed to acknowledge Power Advisory's findings on this issue, despite the directive in the Energy Freedom Act that "any conclusions based on the evidence in the record and included in the [independent, qualified consultant's] report are intended to be used by the commission along with all other evidence submitted during the proceeding to inform its ultimate decision setting the avoided costs for each electrical utility." S.C. Code Ann. § 58-41-20(I).

The Independent Third Party Consultant Final Report Pursuant to South Carolina Act 62 ("Power Advisory Report") was particularly instructive in debunking Duke Energy's overpayment risk argument and $2.26 billion red herring. Power Advisory found that Duke Energy failed to account for the fact that it was the very presence and growth of independently produced renewable power that helped drive down avoided cost rates in North Carolina.[2] The Power Advisory Report also noted that Duke Energy's estimates were based on proposed avoided cost rates, not yet approved by the Commission.[3] Power Advisory highlighted additional factors mitigating any potential risk of overpayment for QF power, including: (1) the relatively low avoided cost rates proposed in this proceeding; (2) the fact that customers may pay more than avoided cost rates for utility-built generation under the traditional regulatory construct where additional expenses may be recovered if they are deemed "prudently" incurred; (3)

[2] Power Advisory Report, at pp. 5-6.
[3] Power Advisory Report, at p. 6, n. 13.

historically low gas prices; (4) the biennial refresh of avoided cost rates for new contracts, and the ability to revisit rates in the interim if needed; and (5) the 10-year baseline contract length under the Energy Freedom Act.[4] Unfortunately the Order completely ignored the Power Advisory analysis and findings.

The Order also ignored other benefits of independently produced renewable energy, including for example: decreased reliance on scarce fossil fuels such as oil and gas, more efficient use of energy,[5] health benefits, societal benefits, and economic benefits.[6] Other benefits of QF power include increasing the generation portfolio diversity of the utility; hedging against fuel price volatility, especially at a time when natural gas prices are at historic lows and estimated to increase in the future; shielding ratepayers from abandoned generation stranded assets, project cost overruns, and environmental compliance costs; and promoting competition and consumer choice.[7] Finally, benefits of QF power include economic benefits for South Carolina more broadly, including jobs, tax revenue, and business investments, in addition to the

[4] Power Advisory Report, at pp. 6-7. Other witnesses, including ORS Witness Horii, JDA Witness Chilton, and SBA Witnesses Davis, Burgess, and Levitas also argued against Duke Energy's overpayment risk claims and testified to the many benefits of QF renewable power. ORS Witness Horii perhaps summed it up most succinctly in response to Commissioner questioning: "I wouldn't put a whole lot of weight in [Duke Energy's overpayment] number." Tr. Vol. 2, p. 596, ll. 20-21. *See also* Tr. Vol. 2, p. 542, l. 21 – p. 548, l. 6; Tr. Vol. 2, p. 592, l. 20 – p. 599, l. 13 (more fully explaining the reasons to reject Duke Energy's arguments regarding overpayment risk).

[5] Tr. Vol. 1, p. 184, l. 21 – p. 185, l. 7.

[6] *See, e.g.*, Tr. Vol. 2, p. 714, l. 3 – p. 717, l. 8.

[7] *See, e.g.*, Tr. Vol. 1, p. 334.8, ll. 6-25; Tr. Vol. 1, p. 365, l. 1 – p. 366, l. 3; Tr. Vol. 1, p. 396, l. 19 – p. 397, l. 15; Tr. Vol. 1, p. 401.10, l. 1 – p. 401.15, l. 8. JDA Witness Chilton further pointed out the inconsistency in Duke Energy's position of advocating for contract lengths of no longer than ten years in this proceeding, at the same time that Duke Energy Renewables regularly signs contracts far longer than ten years in other parts of the Southeast and nation. Tr. Vol. 1, p. 334.9 l. 1-10 ("Either Duke is blatantly disregarding the interest of customers in GA and other states where it's [sic] deregulated business regularly signs PPAs for longer than 10 years, or it is being disingenuous about the actual risk to ratepayers from longer term PPAs."); *see also* Tr. Vol. 2, p. 702, ll. 3-20 (Counsel for Duke Energy stipulating that Duke Energy Renewables regularly enters into contracts longer than ten years, including contracts of 15, 20 and 25 years).

environmental and social responsibility benefits of encouraging renewable energy over more polluting forms of fossil-fuel based electricity generation.[8]

In light of the above information provided in the record, Conservation Groups respectfully request that the Commission revisit and reconsider its findings and conclusions regarding the benefits of independently produced renewable energy and mitigation of ratepayer risks, in addition to the request to reconsider the issue of seasonal allocation, as set forth in more detail below.

APPLICABLE LAW

South Carolina Law Governing the Standard of Review in this Proceeding

Relevant to this petition and that filed by SBA and JDA, it is fundamental that a utility appearing before the Commission bears the burden of proof of showing that its proposed rates and expenses are just and reasonable. *In Re Carolina Water Serv. Inc.*, Docket No. 2006-92-WS, Order No. 2007-140, 2007 WL 4944726 (S.C. P.S.C. Nov. 19, 2007) ("The applicant bears the burden of proof of showing that its proposed rates are just and reasonable."); *See Utility Services of South Carolina, Inc. v SC Office of Reg. Staff*, 708 S.E.2d 755, 762, 398 S.C. 96, 109 (2011) ("[T]he burden remains on the utility to demonstrate the reasonableness of its costs."); *Hamm v. South Carolina Public Service Comm'n*, 309 S.C. 282, 287, 422 S.E.2d 110, 112-13 ("The ultimate burden … remains on the utility.").

[8] Tr. Vol. 1, p. 401.11, ll. 8 00 p. 401.14, l. 11; Tr. Vol. 2, p. 717, l. 22 – p. 718, l. 2; Hearing Exhibit 23 (summarizing the benefits of independently produced renewable energy in North Carolina, including $1.9 billion in renewable energy project development investments in 2018).

The South Carolina Supreme Court has described the burden of proof that utilities must carry in *Hamm*: utilities enjoy an initial presumption that their rates and expenses are "reasonable and incurred in good faith," but once an intervening party or the Commission demonstrates a "tenable basis for raising the specter of imprudence" that presumption of reasonableness dissipates and the utility bears the burden to "further substantiate its claim[s]." *Id.* 309 S.C. at 286, 422 S.E.2d at 112; *see also Utilities Servs. of S.C., Inc. v. S.C. Office of Regulatory Staff*, 392 S.C. 96, 109, 708 S.E.2d 755, 762 (2011). The presumption of reasonableness in favor of the utility does not shift the ultimate burden of persuasion, which remains with the utility, but "shifts the burden of production on to the Commission or other contesting party to demonstrate a tenable basis for raising the specter of imprudence." *Hamm*, 309 S.C. at 286, 422 S.E.2d at 112.

In evaluating a utility's proposals, the Commission is required to first consider whether, based on the record, the Commission or an intervening party has demonstrated a "tenable basis for raising the specter of imprudence" that rebuts the presumption of reasonableness in favor of the utility. *Id.* If this burden of production has been met, the Commission must determine whether the utility has "further substantiate[d]" its claim, *id.*; *Utility Servs. Of S.C., Inc.*, 392 SC. At 110, 708 S.E.2d at 763, in a manner that meets the utility's ultimate burden of proof. *Hamm*, 309 S.C. at 286-87, 422 S.E.2d at 112-13 ("[t]he ultimate burden… remains on the utility.") (citing *Hamm v. S.C. Pub. Serv. Comm'n*, 291 S.C. 119, 352 S.E.2d 476 (1987)).

South Carolina Law Governing Commission Decisions, Petitions for Reconsideration and Rehearing

S.C. Code Ann. Section 58-27-2100 provides that "[a]fter the conclusion of a hearing, the Commission shall make and file its findings and order with its opinion, if any. Its findings shall be in sufficient detail to enable the court of review to determine the controverted questions presented by the proceeding and whether proper weight was given to the evidence." S.C. Code Ann. § 58-27-2100.

Pursuant to S.C. Code Ann. Section 58-27-2150, a party may petition the Commission for reconsideration or rehearing in respect to any matter determined in the proceeding. "The purpose of a petition for rehearing and/or reconsideration is to allow the Commission the discretion to rehear and/or reexamine the merits of issued orders pursuant to legal or factual questions raised about those orders by parties in interest, prior to a possible appeal." *In re: South Carolina Electric & Gas Co.*, Order No. 2013-5 (Feb. 14, 2013).

A petition for rehearing or reconsideration must include: "(a) [t]he factual and legal issues forming the basis for the petition; (b) [t]he alleged error or errors in the Commission order; [and] (c) [t]the statutory provision or other authority upon which the petition is based." S.C. Code Ann. Regs. § 103-825(A)(4).

The Commission must have substantial evidence to support it decisions. *Porter v. S.C. Public Service Comm'n*, 333 S.C. 12, 20 (1998). Substantial evidence is relevant evidence that, considering the record as a whole, a reasonable mind would accept to support an administrative agency's action. *Id.* The Commission must fully document its findings of fact and base its decision on reliable, probative, and substantial evidence in

the whole record. *Id.* at 21. It must make findings that are sufficiently detailed to enable the Court to determine whether the findings are supported by the evidence and whether the law has been applied properly to those findings. *Id.*

Regarding factual findings, the Commission must make "explicit findings of fact which allow meaningful appellate review." *Seabrook v. S.C. Public Service Comm'n*, 401 S.E.2d 672, 674, 303 S.C. 493, 497 (1991). Where material facts are in dispute, the Commission must make specific, express findings of fact. *Porter v. S.C. Public Service Comm'n*, 507 S.E.s2 at 332, 333 S.C. at 21. A recital of conflicting testimony followed by a general conclusion is patently insufficient to enable a reviewing court to address the issues. *Id.*

South Carolina Energy Freedom Act

The South Carolina Energy Freedom Act, designed to encourage renewable energy and independent power production, requires that at least once every twenty-four months, the Commission shall approve each electrical utility's standard offer, avoided cost methodologies, form contract power purchase agreements, commitment to sell forms, and any other terms or conditions necessary to implement the EFA. S.C. Code Ann. § 58-41-20(A). The EFA provides that any decision by the Commission:

> shall be just and reasonable to the ratepayers of the electrical utility, in the public interest, consistent with PURPA and the Federal Energy Regulatory Commission's implementing regulations and order, and nondiscriminatory to small power producers; and shall strive to reduce the risk placed on the using and consuming public.

Id. The EFA further requires that in these proceedings, "the commission shall treat small power producers on a fair and equal footing with electrical utility-owned resources" by ensuring that "rates for the purchase of energy and capacity *fully and accurately* reflect

the electrical utility's avoided costs" *Id.* § 58-41-20(B)(1) (emphasis added). The Act directs that power purchase agreements, including terms and conditions, "are commercially reasonable" and consistent with PURPA, and that each electrical utility's avoided cost methodology "fairly accounts" for costs avoided or incurred "including, but not limited to energy, capacity, and ancillary services" for small power producers, including "those utilizing energy storage equipment." *Id.* § 58-41-20 (B)(2),(3).

The EFA requires Commission decisions in avoided cost dockets to be consistent with PURPA, and the Federal Energy Regulatory Commission's implementing regulations and orders. S.C. Code Ann. § 58-41-20(A).

The EFA also directs the Commission to "engage, for each utility, a qualified independent third party to submit a report that includes the third party's independently derived conclusions as to that third party's opinion of each utility's calculation of avoided costs for purposes of proceedings conducted pursuant to this section." S.C. Code Ann. § 58-41-20(I). The Commission retained Power Advisory, LLC, as its independent third party consultant pursuant to the EFA.

Finally, the EFA applies a heightened standard of transparency on utility avoided cost filings by requiring that

> Each electrical utility's avoided cost filing must be reasonably transparent so that underlying assumptions, data, and results can be independently reviewed and verified by the parties and the commission. The commission may approve any confidentiality protections necessary to allow for independent review and verification of the avoided cost filing.

SC Code Ann. § 58-41-20(J). The statute thus requires transparency regarding assumptions, data, and results, in such a way that not only the parties, but also the

Commission can effectively review the elements and calculations that give rise to avoided cost rates.

Public Utilities Regulatory Policies Act

Section 210 of PURPA and the regulation promulgated pursuant thereto by FERC establish the responsibilities of FERC and state regulatory authorities, including this Commission, to encourage the development of cogeneration and small power production facilities. Under Section 210 of PURPA, cogeneration facilities and small power production facilities that meet certain standards can become "qualifying facilities" ("QFs") and thus become eligible for the rates and exemptions established in accordance with Section 210 of PURPA. 16 U.S.C. § 824a-3(d).

Each utility is required under Section 210 of PURPA to purchase available electric energy from cogeneration and small power production facilities that obtain QF status. *Id.* § 824a-3(a). For such purchases, electric utilities are required to pay rates that are just and reasonable to the ratepayers of the utility, are in the public interest, and do not discriminate against cogenerators or small power producers. *Id.* § 824a-3(b). FERC regulations require that the rates electric utilities pay to purchase electric energy and capacity from qualifying cogenerators and small power producers reflect the cost that the purchasing utility can avoid as a result of obtaining energy and capacity from these sources, rather than generating an equivalent amount of energy itself or purchasing the energy or capacity from other suppliers.

With respect to electric utilities subject to state jurisdiction, FERC delegates the implementation of these rules by the issuance of regulations, on a case-by-case basis, or by any other means reasonably designated to give effect to FERC's rules. However, in

evaluating the evidence before it in this proceeding, the Commission is bound to comply with PURPA's minimum requirements. *E.g.*, C.F.R. § 292.303(a) (requiring utility to purchase "any energy and capacity made available from qualifying facility"); 18 C.F.R. § 292.304(e)(2) (utility must pay for "daily and seasonal" capacity value); 16 U.S.C. § 824a-3(b); 18 C.F.R. § 292.304(a)(1) (rates "shall not discriminate" against QFs).

The Commission must also remain mindful of PURPA's overall aims, and the pro-consumer, competitive effects that it enables. *See Kamine/Besicorp Allegany L.P.*, 908 F. Supp. 1180, 1192 (W.D.N.Y. 1995) ("effect of PURPA is to *introduce new energy producers into the marketplace*" and stating that if "traditional utilities were successful in excluding [QFs]," that could "reduce *competition*") (emphasis added); *In re Renewable Energy Certificates*, 389 N.J. Super. 481, 486 (N.J. Super. Ct. App. Div. 2007) ("Congress enacted the Public Utility Regulatory Policies Act of 1978 . . . *to increase competition* in the production of electricity and reliance on renewable energy.") (emphasis added); *State ex rel. Sandel v. New Mexico Public Utility Com'n*, 127 N.M. 272, 275, 980 P.2d 55, 58 (N.M. 1999) ("*Congress introduced competition* into the generation component of the electric power industry by enacting the Public Utility Regulatory Policies Act of 1978.") (emphasis added). As the U.S. Supreme Court has recognized, "Section 210 of PURPA was designed to encourage the development of cogeneration and small power production facilities." *American Paper Inst. v. Am. Elec. Power Serv. Corp.*, 461 US 402, 405 (1983). In enacting PURPA, "Congress believed that increased use [renewable energy] would reduce the demand for traditional fossil fuels" and it recognized that electric utilities have traditionally been "*reluctant* to

purchase power from, and to sell power to, the nontraditional facilities." *FERC v. Mississippi*, 456 U.S. 742, 750 (1982) (emphasis added).

FACTS

The capacity payments offered to QFs are directly impacted by the seasonal allocation of capacity value between winter and summer months. In this proceeding Duke Energy proposed a seasonal allocation of capacity value heavily weighted towards the winter season.[9] Duke Energy Witness Snider testified that a study conducted by Astrapé Consulting, the *Solar Capacity Value Study* ("*the Study*"), found that 100% of DEP's loss of load risk occurs in the winter and 90% of DEC's loss of load risk occurs in the winter.[10] Based on the *Study*, DEP proposed to pay its entire annual capacity rate for independent solar power and other QF resources in the winter and DEC proposed to pay 90% of its annual capacity in the winter and the remaining 10% in the summer.[11] Because solar generation is highest during summer afternoons and lowest during early winter mornings, the approval of Duke Energy's capacity rate design weighted heavily to winter mornings significantly—and inaccurately—minimizes the value that solar QFs provide to the grid.[12] As such, the seasonal allocation of capacity value has a dramatic impact on the ability of QFs to obtain fair compensation in exchange for the capacity value they provide.[13]

[9] Tr. Vol. 1, p. 58.19, ll. 4-9.
[10] Tr. Vol. 1, p. 58.19, ll. 9-13. Seasonal allocation of capacity value is based on modeling that predicts the months and hours of the year when the system is most likely to be unable to meet load with its current resources. *See* Exhibit 14 at p. 5.
[11] Tr. Vol. 1, p. 58.19, ll. 13-15.
[12] *See* Tr. Vol. 1, p. 382.46, l. 19 – p. 382.47, l. 7.
[13] Tr. Vol. 1, p. 382.47, ll. 1-7.

As described in the Commission's Order, ORS Witness Horii, SBA Witness Burgess, and the Conservation Groups' Witness Stenclik, along with the Commission's qualified independent consultant, Power Advisory, all extensively objected to Duke Energy's proposed seasonal allocation of capacity value.[14] Each witness critiqued distinct aspects of Duke Energy's proposed seasonal capacity weighting.

Witness Horii testified that Duke Energy's proposed allocation of capacity value inappropriately reflected projected "Tranche 4" solar penetration levels rather than current solar penetration levels.[15] Witness Horii explained that Duke Energy's decision to base relative Loss of Load Expectation ("LOLE") on a significantly higher level of solar penetration than what is currently operating is problematic because the timing of the need for capacity when there is more solar penetration is not the same as the timing of the need for capacity when there is less solar. At higher levels of solar generation, the need for system capacity shifts away from the hours where already installed solar is generating.[16] Witness Horii proposed an alternative seasonal and time of day allocation of capacity costs. For DEC, Witness Horii recommended 40% summer, 48% winter morning, and 12% winter evening allocation of capacity factors.[17] For DEP, Witness Horii recommended a 1% summer, 69% winter morning, and 30% winter evening allocation.[18]

Witness Burgess testified that multiple assumptions in Astrapé Consulting's *Solar Capacity Value Study* improperly biased the distribution of loss of load hours ("LOLH")

[14] Order at pp. 106-08.
[15] Tr. Vol. 2, p. 525.14, ll. 8-16.
[16] Tr. Vol. 2, p. 525.14, ll. 17-21.
[17] Tr. Vol. 2, p. 525.17, l. 1.
[18] Tr. Vol. 2, p. 525.18, ll. 5-11. Mr. Horii did not explicitly set forth the winter evening allocation, but the remainder of 100% minus 1% summer allocation and 69% winter morning is 30% winter evening allocation.

towards early mornings in winter months rather than afternoons in summer months, when solar production is high.[19] Witness Burgess also explained that Duke Energy's proposed capacity value allocation did not match historical load data for DEC and DEP.[20] Witness Burgess proposed an alternative seasonal allocation that more closely reflects the historical pattern.[21] In response to Duke Energy Witness Snider's critiques of his analysis, Witness Burgess revised his analysis to account for must-take solar output and adjust the number of hours used.[22] Having made these adjustments, Witness Burgess recommended a seasonal capacity allocation of 58% summer and 42% winter for DEC, and 4% summer and 96% winter for DEP.[23] Witness Burgess also noted the importance of demand response assumptions for calculating seasonal allocation of capacity value, and stated that Duke Energy had refused to perform any revised LOLE analysis accounting for increased winter demand response.[24] Witness Burgess explained that even a modest increase in winter demand response could have significant effects and should be considered.[25]

Witness Wilson testified that the *Solar Capacity Value Study* underlying Duke Energy's seasonal allocation proposal employed the same model and had many of the same flawed assumptions used in Duke Energy's 2016 Resource Adequacy Studies for DEC and DEP ("2016 RA Studies") prepared by Astrapé Consulting.[26] Witness Wilson explained that the 2016 RA Studies, and by extension the *Solar Capacity Value Study*,

[19] Tr. Vol. 1, p. 382.47, l. 13 – p. 382.48, l. 2.
[20] Tr. Vol. 1, p. 382.52, l. 12 – p. 382.53, l. 3.
[21] Tr. Vol. 1, p. 382.54, ll. 11-17.
[22] Tr. Vol. 2, p. 787.21, ll. 8-17.
[23] Tr. Vol. 2, p. 787.22, l. 18 – p. 787.23, l. 1.
[24] Tr. Vol. 2, p. 787.23, ll. 4-14.
[25] Tr. Vol. 2, p. 787.24, ll. 4-6.
[26] Tr. Vol. 2, p. 495.3, l. 10 – p. 495.4, l. 3.

significantly overstate the risk of very high loads under extreme cold, primarily due to the faulty approach Astrapé Consulting used to extrapolate the relationship between temperature and load at very low temperatures.[27] Witness Wilson testified that "[t]he data strongly suggest that if the [flawed Duke Energy] regressions were corrected, the resource adequacy risk would still be weighted toward summer on both systems."[28] Witness Wilson also identified several additional flaws in the 2016 RA Studies, including unreasonable demand response and operating reserve assumptions and overstated economic load forecast uncertainty assumptions.[29] Witness Wilson explained that each of these flaws resulted in winter resource adequacy risk being substantially overstated relative to risk in the summer.[30]

Witness Wilson recommended that the Companies' proposed seasonal allocation of capacity value be rejected and much more balanced seasonal allocation be developed and approved.[31] Witness Wilson did not recommend an alternative seasonal capacity allocation because to do so he would require the use of Duke Energy's modeling tools,[32] and the Companies had historically been unwilling to provide standard model reports or perform additional simulations or sensitivity analyses in response to stakeholder requests for additional transparency.[33] Witness Wilson testified that defaulting to the most recently approved seasonal allocations which were not tainted by the 2016 RA Studies and *Solar Capacity Value Study*, and represented a more balanced allocation between

[27] Tr. Vol. 2, p. 495.6, ll. 11-14; Hearing Exhibit 14, at pp. 6-13
[28] Hearing Exhibit 14, p. 12; Power Advisory Report at p. 26.
[29] Tr. Vol. 2, p. 495.6, ll. 15-18; Hearing Exhibit 14, at p. pp. 19-21.
[30] Tr. Vol. 2, p. 495.6, ll. 16-18.
[31] Tr. Vol. 2, p. 495.7, ll. 16-19.
[32] Tr. Vol. 2, p. 495.8, ll. 8-11.
[33] Hearing Exhibit 14, at p. 5.

winter and summer, would be reasonable.[34] Furthermore, at the hearing and in a subsequent late-filed Exhibit, Witness Wilson explained that the numerous flaws in Duke Energy's RA Studies and *Solar Capacity Value Study* could be avoided by requiring the Companies to develop their resource adequacy studies through a stakeholder process that required the utility to revise and improve its assumptions and methodologies in response to stakeholder input.[35] Witness Wilson recommended that Duke Energy's *Solar Capacity Value Study* and proposed seasonal capacity allocation be rejected and the Commission order the Companies to begin a stakeholder process with discussion and review of draft versions of a new resource adequacy study.[36]

The Commission's consultant, Power Advisory, found that "[Witness] Wilson's evidence is compelling that Duke's approach to modeling the impact of extreme temperatures is problematic."[37] Power Advisory also explained that the sensitivity analysis run by Duke Energy and the North Carolina Public Staff, which estimated that correcting for Duke's modeling of temperature and load would only have a modest impact (0.3%) on reserve requirements, may not appear to be a material concern on its own, the impact on the weighting of capacity value between summer and winter seasons may in fact be material.[38]

Power Advisory found the LOLE methodology to be an appropriate approach to assessing the seasonal contribution of capacity, but concluded that the inputs should be

[34] Tr. Vol. 2, p. 519, ll. 1-9.
[35] Tr. Vol. 2, p. 498, l. 23 – p. 499, l. 19; Late Filed Exhibit 15.
[36] Tr. Vol. 2, p. 499, l. 20 – p. 500, l. 5; Late-Filed Exhibit 15.
[37] Power Advisory Report at p. 27.
[38] *Id.*; Tr. Vol. 2, p. 828.8, ll. 14-17. As Witness Wilson explained, "a different approach to the load forecast uncertainty could well have a substantial impact on LOLE allocation, due to the substantial differences between the summer and winter load shapes to which the load forecast uncertainty multipliers are applied."

based on currently installed solar power capacity rather than expected future capacity. Power Advisory thus concurred with ORS Witness Horii's recommendation that the avoided capacity cost of solar should be based on the amount of solar on the system today and found the capacity weightings proposed by Witness Horii more reasonable than those proposed by the Companies.[39] Power Advisory did not recommend the seasonal estimate put forth by SBA Witness Burgess, but said it represented a reasonable check on the LOLE modeling.[40]

ARGUMENT

The Commission's Order properly rejected Duke Energy's proposed seasonal allocation of capacity value, but approved ORS Witness Horii's alternative allocation.[41] Witness Horii revised Duke Energy's analysis by changing the solar penetration levels used in the calculation from "Tranche 4" to "Existing plus Transition."[42] This change meant that the LOLE used to determine seasonal allocation of capacity value was based on current level of solar penetration rather than some hypothetical future amount of solar penetration as originally proposed by Duke Energy.[43] Although Witness Horii's analysis addresses one error in Duke Energy's methodology, it failed to account for several other more fundamental methodological errors identified Witnesses Stenclik and Burgess and acknowledged by Power Advisory. These errors had the cumulative impact of skewing

[39] Power Advisory Report at p. 27.
[40] *Id.*
[41] Order No. 2019-881(A), Amended Order Approving Duke Energy Carolinas, LLC's and Duke Energy Progress LLC's Standard Offer Tariffs, Avoided Cost Methodologies, Form Contract Power Purchase Agreements, and Commitment to Sell Forms (hereinafter "Order"), Docket Nos. 2019-185-E and 2019-186-E, at pp. 30-31.
[42] Tr. Vol. 2, p. 525.16, ll. 5-21.
[43] *Id.*

the seasonal allocation—and QF compensation—to the winter season, early morning hours, and away from summer hours in which solar facilities generate power during peak demand hours.

Because it addressed only one of the flaws in Duke Energy's approach, Witness Horii's adjustment to Duke Energy's proposed seasonal allocation of capacity value was necessary but not sufficient. The result is still an avoided capacity allocation and value that is based on the deeply flawed *Solar Capacity Value Study,* and addresses only one of the many identified flaws.[44] The Commission's adoption of a seasonal allocation of capacity value based on analysis that only addresses one of many errors in Duke Energy's methodology for deriving seasonal allocation resulted in an avoided capacity rate that significantly undervalues the solar QFs' capacity contributions in summer months. Though Witness Horii's analysis is less unreasonable than the Companies' original proposal, the fact remains that this seasonal allocation, and therefore the capacity rate approved by the Commission, is not supported by substantial evidence on the record.

As a threshold matter, the Commission's Order omitted key testimony from intervenors regarding flaws in the *Solar Capacity Value*; the need for future resource adequacy studies to be developed through robust stakeholder participation; and the appropriateness of using seasonal allocations approved by the Commission in prior proceedings. For example, The Commission Order stated that Witness Wilson's testimony did not propose an alternative seasonal allocation, but failed to note that Witness Wilson testified that defaulting to the most recently approved seasonal

[44] *See* Tr. Vol. 2, p. 500, ll. 6-11 (Witness Wilson testified, "I can't point to a particular value like Mr. Horii's because, ultimately, the answer should come out of a solid resource adequacy study… he's got an approach that came up with his numbers, but it's not, you know, fully supported by a resource adequacy study.").

allocations which were not tainted by the issues he identified in the 2016 RA Studies and *Solar Capacity Value Study*, and represented a more balanced allocation between the winter and summer would be preferable to approving an allocation based on the flawed *Study*.[45] The Commission's Order also failed to reference Witness Wilson's surrebuttal testimony,[46] testimony in response to Commissioner questions,[47] and his late filed exhibit,[48] which discussed the industry standard for developing resource adequacy studies and how Duke's opaque approach to preparing the *Solar Capacity Value Study* substantially deviated from this standard.

Furthermore, the Commission's Order approved Witness Horii's seasonal allocation proposal, which was derived from the *Solar Capacity Value Study*, despite extensive evidence that the *Study* was fundamentally flawed and unreliable. The Order also impermissibly placed the burden on intervenors to provide an alternative to Duke Energy's seasonal allocation of capacity value, when South Carolina law mandates that the utility must bear the burden of proof in a proceeding of this nature. Finally, the Order failed to make specific, express findings of fact regarding the Companies' proposed seasonal allocation and the *Solar Capacity Value Study*. These three errors are addressed in more detail below.

Conservation Groups respectfully request that the Commission reconsider its approval of the seasonal allocation of capacity value based on Witness Horii's calculations. Instead the Commission should reject Duke Energy and Witness Horii's proposed seasonal allocations, and default to the seasonal allocation previously approved

[45] Tr. Vol. 2, p. 519, ll. 1-9.
[46] Tr. Vol. 2, pp. 828.1-828.10.
[47] Tr. Vol. 2, p. 496, ll. 15 – p. 519, l. 22.
[48] Late Filed Exhibit 15.

by the Commission on May 4, 2016 in Docket No. 1995-1192-E. This previously adopted seasonal allocation is the only proposed allocation that avoids reliance on the flawed 2016 resource adequacy studies. The Commission should also implement requirements for future resource adequacy studies that will make it more likely that in future proceedings, the utility's proposed seasonal allocation of capacity value is supported by substantial evidence.

I. The Record Does Not Support the Adoption of a Seasonal Allocation of Capacity Value Based on Duke Energy's Flawed Solar Capacity Value Study

Duke Energy and Witness Horii's proposed seasonal allocation of capacity value both rely on the loss of load risk calculated by the Companies' *Solar Capacity Value Study*. Witnesses Wilson and Burgess identified several major flaws in the *Solar Capacity Value Study's* methodology that inaccurately inflated loss of load risk during the winter.[49]

Witness Wilson testified that the *Solar Capacity Value Study* underlying Duke Energy's seasonal allocation proposal employed the same model and many of the same flawed assumptions used in Duke Energy's 2016 RA Studies prepared by Astrapé Consulting.[50] Witness Wilson explained that the 2016 RA Studies and the *Solar Capacity Value Study* significantly overstated the risk of very high loads under extreme cold due to the faulty approach used by Astrapé Consulting in the 2016 RA Studies to extrapolate the relationship between temperature and load at very low temperatures.[51]

[49] Tr. Vol. 1, p. 382.47, l. 13 – p. 382.48, l. 2; Tr. Vol. 2, p. 495.1 – p. 519, l. 18; Hearing Exhibit 14.
[50] Tr. Vol. 2, p. 495.3, l. 10 – p. 495.4, l. 3.
[51] Tr. Vol. 2, p. 495.6, ll. 11-14; Hearing Exhibit 14, at pp. 6-13

Power Advisory concluded that "Wilson's evidence is compelling that Duke's approach to modeling the impact of extreme temperatures is problematic."[52]

Witness Wilson identified several additional flaws in the 2016 RA Studies and *Solar Capacity Value Study*, including demand response and operating reserve assumptions applicable to winter peak conditions that overstated winter resource adequacy risk relative to the risk in summer and other periods of the year.[53] Witness Wilson also critiqued the 2016 RA Studies' economic load forecast uncertainty assumptions, which greatly overstated the risk of large and unexpected increases in peak load during winter and summer.[54]

Witness Burgess also identified multiple flaws in the *Solar Capacity Value Study's* methodology. Witness Burgess testified that several assumptions relied upon by the *Study* biased the distribution of loss of load hours ("LOLH") towards early mornings in winter months rather than afternoons in summer months, when solar production is high.[55] These assumptions included: the flawed load forecasts for DEC and DEP; unsupported differences in the availability of demand response in winter and summer months; mischaracterization of neighboring utility load, transmission constraints, and corresponding availability of neighbor support during summer and winter months; and improper seasonal variation in assumptions for forced outage rates and planned maintenance.[56] Witness Burgess also explained that Duke Energy's proposed capacity

[52] Power Advisory Report at p. 27.
[53] Tr. Vol. 2, p. 495.6, ll. 14-18; Hearing Exhibit 14, at pp. 19-21.
[54] Tr. Vol. 2, p. 495.6, ll. 19-21; Hearing Exhibit 14, at pp. 14-19
[55] Tr. Vol. 1, p. 382.47, l. 13 – p. 382.48, l. 2.
[56] Tr. Vol. 1, p. 382. 48, l. 15 – p. 382.52, l. 8.

value allocation did not match historical load data for DEC and DEP.[57] Witness Burgess proposed an alternative seasonal allocation that more closely reflects the historical pattern, which had greater loss of load risk and resulting capacity value allocation in the summer for both DEC and DEP.[58]

There is significant evidence in the record demonstrating that the *Solar Capacity Value Study* used to support Duke Energy's proposed seasonal allocation of capacity value, which also underlies Witness Horii's alternative seasonal allocation analysis, inaccurately portrays resource adequacy risk and overstates loss of load risk in the winter. Power Advisory described Witness Wilson's testimony regarding the *Study's* methodological errors as presenting "compelling" evidence that Duke Energy's modeling of the impact of extreme temperatures on load is "problematic."[59]

Duke Energy's primary response to Witness Wilson's critiques of the *Solar Capacity Value Study* was that the North Carolina Public Staff had worked with the Companies to resolve its concerns about the *Study's* methodology.[60] The North Carolina Public Staff was not a party to this proceeding. Furthermore, the Duke Energy and North Carolina Public Staff's Joint Report referenced by Witness Snider failed to substantively address Witness Wilson's primary critique regarding the *Study* regarding the relationship between extreme cold and load.[61] Power Advisory concurred with Witness Wilson, concluding that while an impact on required reserve margins of an estimated 0.3% may not appear to be a material concern, "this does not mean that impact on the weighting of

[57] Tr. Vol. 1, p. 382.52, l. 12 – p. 382.53, l. 3.
[58] Tr. Vol. 1, p. 382.54, ll. 11-17.
[59] Power Advisory Report at p. 27.
[60] Tr. Vol. 2, p. 630.75, l. 12 – p. 630. 76, l. 3.
[61] Tr. Vol. 2, p. 828.6, ll. 1-6.

capacity value between summer and winter seasons is also immaterial."[62] Duke Energy Witness Snider also argued that adopting Witness Wilson's recommendations regarding load forecast uncertainty "would not have any impact on the allocation of LOLE or the Companies' rate design."[63] However, as Witness Wilson explained, even a modest impact on required reserve margins "could well have a substantial impact on LOLE allocation, due to the substantial differences between the summer and winter load shapes to which the load forecast uncertainty multipliers are applied."[64]

Duke Energy bears the burden of proof in this proceeding to demonstrate that its proposals are just and reasonable. Duke Energy has failed to meet its burden of proof: the Companies' *Solar Capacity Value Study* and the seasonal allocation of capacity values derived from the *Study* lack substantial supporting evidence. Intervenors have raised "the specter of imprudence" through the introduction of significant evidence into the record demonstrating that the *Solar Capacity Value Study* is deeply flawed and does not accurately calculate the seasonal allocation of capacity value. Duke Energy has failed to adequately address the errors in the *Solar Capacity Value Study* pointed out by intervenors, has not "further substantiate[d]" the *Study's* calculations, and has not met its ultimate burden of proof in supporting the loss of load risk and capacity value conclusions derived from the *Study*. The Commission's Order, which approved a seasonal allocation of capacity value based on the *Solar Capacity Value Study*, lacks substantial evidentiary support because the record demonstrates that Duke Energy has

[62] Power Advisory Report at pp. 26-27; *see also* Hearing Exhibit 14, p. 12 (Witness Wilson's expert report concluding that "[t]he data strongly suggests that if the regressions were corrected, the resource adequacy risk would still be weighted towards summer on both [DEC and DEP]").
[63] Tr. Vol. 2, p. 630.77, ll. 7-12.
[64] Tr. Vol. 2, p. 282.8, ll. 14-17.

failed to carry its burden of proof to demonstrate that the *Study* is methodologically sound and reliable.

II. The Commission's Order Impermissibly Placed the Burden on Intervenors to Provide an Alternative to Duke Energy's Proposed Seasonal Allocation of Capacity Value

The Commission's Order notes that "Witness Wilson recommended that the Companies' seasonal allocation be rejected, but failed to propose an alternative seasonal allocation."[65] But as previously noted, it is Duke Energy—not intervenors—that bear the burden of proof in this proceeding. *Utility Services of South Carolina, Inc. v SC Office of Reg. Staff*, 708 S.E.2d at 755, 392 S.C. at 110; *Hamm v. South Carolina Public Service Comm'n*, 309 S.C. at 286, 422 S.E.2d at 112-13. The Commission's Order impermissibly shifted the burden of proof to intervenors by requiring them to propose an alternative seasonal allocation. As the Commission's Order properly recognized, Duke Energy's proposed seasonal allocation of capacity value lacks substantial evidentiary support.[66] In the absence of a proposal supported by substantial evidence, the Commission must reject the proposed seasonal allocation of capacity value.

III. The Commission's Order Failed to Make Adequate Findings of Fact Regarding Seasonal Allocation of Capacity Value

Furthermore, the Commission's Order failed to make explicit findings of fact regarding the *Solar Capacity Value Study* and Duke Energy's proposed seasonal allocation of capacity value. As a result, several disputes regarding material facts have been left unresolved.

[65] Order at p. 108.
[66] Order at p. 112.

South Carolina law provides that where material facts are in dispute, the Commission must make specific, express findings of fact. *Porter v. S.C. Public Service Comm'n*, 507 S.E.2d at 332, 333 S.C. at 21. A recital of conflicting testimony followed by a general conclusion is insufficient to enable a reviewing court to address the issues. *Id.*

The Order's sole Finding of Fact regarding seasonal allocation states:

> DEC's proposed seasonal allocation weightings of 90% for winter and 10% for summer, and DEP's proposed seasonal allocation weightings of 100% for winter, should not be used in calculating DEC's and DEP's avoided capacity rates in this proceeding. Rather, the proposed seasonal allocation by ORS Witness Horii shall be used.[67]

While parts of the Order resolve the dispute between Duke Energy and intervenors and ORS regarding the proper level of solar penetration to be used when calculating seasonal allocation of capacity value,[68] the Order leaves unresolved several other disputes regarding material facts. For example, the Order failed to reach any conclusion regarding the Witness Wilson's critiques regarding the underlying *Solar Capacity Value Study*'s modeling of the relationship between temperature and load at very low temperatures.[69] The Order also failed to resolve the dispute between Witness Wilson and Witness Snider regarding whether Witness Wilson's recommendations, if implemented, would have any impact on Duke Energy's seasonal allocation.[70] Power Advisory found Witness Wilson's testimony persuasive on both these issues.[71] The Commission's failure to make explicit findings of fact on these issues and "determine the controverted questions presented by

[67] Order at pp. 30-31.
[68] *See* Order at p. 112.
[69] Tr. Vol. 2, pp. 495.1-495.8; pp. 828.1-828.10.
[70] Tr. Vol. 2, p. 630.77, ll. 7-14; Tr. Vol. 2, p. 828.8, l. 7 – p. 828.9, l. 5.
[71] Power Advisory Report at p. 27.

the proceeding[,]" S.C. Code Ann. § 58-27-2100, precludes "meaningful appellate review[,]" *Seabrook v. S.C. Public Service Comm'n*, 401 S.E.2d at 674, 303 S.C. at 497, and renders the Order legally insufficient.

CONCLUSION AND REQUEST FOR RELIEF

As a preliminary matter, Conservation Groups respectfully request that the Commission reconsider its findings and conclusions regarding ratepayer risk as it relates to utility-owned generation and independently owned renewable energy generation. The Order as currently written fails to adequately account for the extensive evidence presented in the proceeding showing that independently produced renewable energy benefits ratepayers and serves the public interest, while avoiding many of the risks associated with utility-owned generation and that any overpayment risk is significantly mitigated.

Electric utilities in South Carolina bear the burden of proving that their proposed rates are just and reasonable. When the utility fails to meet its burden of proof, the utility's proposed rates must be rejected. Here, Duke Energy has failed to meet its burden of proof that the *Solar Capacity Value Study*, and the seasonal allocation of capacity value that it supports, is methodologically sound and reasonable. Unfortunately, the alternative seasonal allocation proposed by Witness Horii and adopted by the Commission is based on the same flawed *Study* as Duke Energy's proposal, and corrected for just one of many flaws and errors in the original proposal. Conservation Groups respectfully request that the Commission reconsider its decision to approve Witness Horii's proposed seasonal allocation of capacity value.

Conservation Groups respectfully request that the Commission direct Duke Energy to use the seasonal capacity allocation previously approved by this Commission on May 4, 2016 in Docket No. 1995-1192-E.[72] The previously approved seasonal allocations were not tainted by the flawed 2016 Resource Adequacy Studies.

The Conservation Groups further request that the Commission implement requirements for future resource adequacy studies that will ensure that in future proceedings, the utility's proposed seasonal allocation of capacity value is supported by substantial evidence.

First, the Commission should order the Companies to develop and propose a process for stakeholders to review and provide input on current and future resource adequacy studies, including inputs regarding: (1) the relationship between extreme cold and load; (2) the drivers of sharp winter load spikes under extreme conditions and develop programs for shaving these rare and brief spikes; and (3) the potential for load forecast error due to economic and demographic forecast errors, and the realistic extent to which this could lead to less capacity than planned in a delivery year and to inform future resource adequacy studies. The Companies should be required to file a report with the Commission detailing the conclusions of this stakeholder process.

Second, the Commission should require that for all future resource adequacy studies, the Companies: (1) develop and propose a process for stakeholders to review and provide input on proposed assumptions for future resource adequacy studies before

[72] On May 4, 2016, in Docket No. 1995-1192-E, the Commission approved DEP and DEC's proposal to use the avoided cost rates (and seasonal allocations) previously approved by the North Carolina Utilities Commission on December 17, 2015. This included a "60%/40% weighting for summer and non-summer months, respectively, for the proposed avoided capacity rates under DEC Option B and DEP Options A and B, and an 80%/20% (summer/non-summer) weighting for DEC Option A." Order Establishing Standard Rates and Contract Terms for Qualifying Facilities, Docket No. E-100, Sub 140 at p. 31.

those assumptions are finalized; (2) develop and propose a process that affords stakeholders an opportunity to request details of model inputs and output, sensitivity analyses, and other model validation information before studies are finalized; and (3) develop and propose a process that provides for up-front stakeholder review and feedback of future resource adequacy studies.

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CERTIFICATE OF SERVICE

I hereby certify that the parties listed below have been served via electronic mail with a copy of the *Petition for Reconsideration or Rehearing* filed on behalf of the South Carolina Coastal Conservation League and Southern Alliance for Clean Energy.

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This 13th day of January, 2020.

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